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EXAMINER

PATEL, GAUTAM

ART UNIT	PAPER NUMBER
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2655

DATE MAILED: 03/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/515,101

Applicant(s)

Seo

Examiner

Gautam R. Patel

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Feb 27, 2002
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24, 26, 27, 31-42, 48-51, 53, and 57 is/are rejected.
- 7) ☒ Claim(s) 25, 28-30, 43-47, 52, and 54-56 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 5, 7, 8, 9
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. Claims 1-57 are pending for the examination.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. § 119(a)-(d), which papers have been placed of record in the file.

NOTES & REMARKS

3. The lengthy specification has not been checked to the extent necessary to determine the presence of numerous minor errors. For example see claims 26, 28, 40, 45 and 56 with many spelling errors. Applicant's cooperation is requested in correcting any errors of which Applicant may become aware in the specification.

Specification

4. The disclosure is objected for following reasons.
The title of the invention is neither precise nor descriptive. A new title is required which should include, using twenty words or fewer, claimed features that differentiate the invention from the Prior Art.

Correction is required.

Claim Objections

5. Claims 26-34, 40-52 and 56 are objected for following reasons.

Spelling of "up/down counting", "up/down count" and up/down counter" is wrong in many places in these claims. The Applicants are encouraged to correct these oversights.

6. Claims 33-34 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 31-32 respectively. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

7. Claims 52, 54 and 55 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 51 is an apparatus claim while claim 52 which depends upon 51 is a method claim, making this claim indefinite with improper dependence. Similarly claim 53 is an apparatus claim while claims 54 and 55 which depend on it are method claims, making these claims indefinite with improper dependence. A search has been made to find the most pertinent art, but no statement will be made regarding the allowableness of claims 52, 54-55 and no art rejection will be made in this office action regarding the claims 52, 54-55, due to the speculation required to interpret the claims because of their indefiniteness. These claims withdrawn from further consideration.

Corrections are required.

Claim Rejections - 35 U.S.C. § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-4 and 7-11, 24, 38-39 and 42 are rejected under 35 U.S.C. § 102(e) as being anticipated by Suzuki et al., US. patent 6,246,659 (hereafter Suzuki).

As to claim 1, Suzuki discloses the invention as claimed [see Figs. 1-11], including generating a periodic synchronization signal and controlling the power of the laser diode comprising the steps of:

(a) generating a periodic synchronization signal [col. 3, lines 13-41 and col. 8, lines 11-32]; and

(b) controlling the power of the laser diode in synchronism with the synchronization signal [col. 3, lines 13-41 and col. 8, line 51 to col. 9, line 8].

9. As to claim 2, Suzuki discloses:

the step (b) comprises:

(b1) comparing a level of the power of the laser diode with the reference level [col. 8, line 33-50];

(b2) latching [sample and hold] the compared result in response to the synchronization signal [col. 8, lines 11-50]; and

(b3) controlling the power level of the laser diode according to the difference between the latched power level and the reference level [col. 8, lines 11-50].

10. As to claim 3, Suzuki discloses:

the sub-step (b1), the synchronization signal has a predetermined enable interval [11T], and the power level of the laser diode is latched during the enable interval [col. 5, line 66 to col. 6, line 21 and col. 8, lines 11-50].

11. As to claim 4, Suzuki discloses:

the sub-step (b1) further comprises sampling the power level of the laser diode during the enable interval, and latching an average of the sampled power levels [col. 8, line 33 to col. 9, line 8].

12. As to claim 7, Suzuki discloses:

the disc is a digital versatile disc-random access memory (DVD-RAM) [col. 1, lines 7-17], and the synchronization signal is obtained by dividing a clock signal required to drive the DVD-RAM by a ratio [ratio of 11 to 1] [col. 8, 33-56].

13. As to claim 8, Suzuki discloses:

varying the division ratio [col. 3, lines 13-41].

14. As to claim 9, Suzuki discloses:

the step (b) comprises:

(b1) sampling control values designating a level of the power of the laser diode, in synchronism with the synchronization signal;

(b2) calculating an average of a predetermined number of the sampled control values; and

(b3) controlling the power level of the laser diode in accordance with the average of the sampled control values [col. 5, line 66 to col. 6, line 21].

NOTE: Central region gives average power. To power sampling pulse.

15. As to claim 10, Suzuki discloses:

the synchronization signal is obtained by dividing a clock signal required to drive the disc by a ratio [ratio of 11 to 1] [col. 8, 33-56].

16. As to claim 11, Suzuki discloses:
varying the division ratio [col. 3, lines 13-41].

17. As to claims 24 and 42, Suzuki discloses:
adjusting the reference level based upon a read mode, a record mode and an erase mode for the disc [col. 1, lines 27-49].

NOTE: read mode record mode and erase mode are inherently present in these kind of power control operations.

18. As to claim 38, it is an apparatus claim corresponding to claim 1 and it is therefore rejected for the same reasons set forth in the rejection of claim 1, supra.

19. As to claim 39, it is an apparatus claim corresponding to claim 2 and it is therefore rejected for the same reasons set forth in the rejection of claim 1, supra.

20. Claims 35 and 53 are rejected under 35 U.S.C. § 102(e) as being anticipated by Aoki, US. patent 5,414,692 (hereafter Aoki).

Aoki discloses detecting level of power and controlling the power of laser in non-effective area comprising steps of:

detecting a level of the power of the laser diode reflected from the disc;
controlling the power of the laser diode only at non-effective data areas of the disc in accordance with the detected power level of the laser diode [col. 1, lines 29-52].

21. As to claim 53, it is an apparatus claim corresponding to the method of claim 35 and is rejected for the similar reasons set forth in the rejection of claim 35.

Claim Rejections - 35 U.S.C. § 103

22. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. Claims 5-6, and 22, 27, 32, 34, 36-37, 41, 48, 50 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Suzuki as applied to claims 1-4, 7-11, 24, 38-39, and 42 above and in view of Aoki.

As to claim 5, Suzuki discloses all of the above steps including light being reflected from these sectors and power being control from these reflections with help of synchronization signal. Suzuki does not specifically disclose well known details of the sector format, specifically areas like mirror and gap. However, it is well known in the art that most disc have areas like mirror and gap inherently present for proper operation of the disc. Aoki clearly discloses these are well known concepts in the art [see fig. 4; Aoki]. Aoki discloses:

the disc is a digital versatile disc-read only memory (DVD-ROM) [col. 1, lines 5-12], and the synchronization signal is a mirror signal indicating a mirror area of the DVD-ROM [col. 1, lines 29-53]. Both Suzuki and Aoki are interested in controlling the laser power in most efficient way from the reflection of the surface. Both Suzuki and Aoki discloses optical recording medium with reflective surfaces. Both are taking these signals to control the power.

Therefore, it would have been obvious to provide the system of Suzuki with details of the disc layout and associated details as taught by Aoki. The application or use of these layout details as taught by Aoki would have been obvious, because the layout of the disc performs the same function in the same way as the layout of Suzuki and is an equivalent element. One of ordinary skill in the art would have recognized that the disc layout of Aoki was an equivalent and an obvious alternative to disc layout of Suzuki.

24. As to claim 6, Aoki discloses:

the disc is a digital versatile disc-read only memory (DVD-ROM), and the synchronization signal is a gap signal indicating a gap area of the DVD-ROM [col. 1, lines 29-53]..

25. As to claim 22, it is rejected for the same reasons set forth in the rejection of claim 5, supra. NOTE: non-effective area is mirror area.

26. As to claims 27, 32, 34, 37, 41, 48 and 50 they are rejected for the same reasons set forth in the rejection of claims 5 and 8, supra.

27. As to claim 36, Suzuki discloses:

comparing the detected power level with a reference signal;
generating a power level signal in accordance with the compared result;
generating a synchronization signal;
latching the power level signal in accordance with the synchronization signal to determine a latched power level signal; and
supplying the latched power level signal to the laser diode to control the power of the laser diode.[col. 8, lines 11-50].

28. Claims 12-21, 26, 31, 33, 40, 49, 51 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Suzuki as applied to claims 1-4, 7-11, 24, 38-39, and 42 above, and further in view of Hayashi et al., US. patent 5,146,240 (hereafter Hayashi).

As to claim 12, Suzuki discloses, an apparatus for controlling a power of a laser diode emitting laser light on a disc, comprising:

a photo diode [fig. 1, unit 14; monitor diode] which receives the laser light [fig. 1, laser light 12] reflected by the disc to generate a current signal corresponding to a level of power of the reflected laser light [col. 5, lines 45-65 and fig. 1];

a comparator [fig. 1, unit 28] which outputs an output voltage [fig. 1, output of unit 28] corresponding to the current signal from the photo diode compares the output voltage with a reference voltage [fig. 1, signal from unit 36] and outputs a binary decision signal [output of unit 38] which indicates which of the output voltage and the reference voltage is higher [col. 6, lines 40-65].

Suzuki discloses all of the above elements, including automatic laser power controlling means and says these are well known in the art [col. 1, lines 28-48 and fig. 2]. Suzuki does not specifically disclose that automatic laser power control is accomplished with the help of an up/down counter and D/A or DAC. However it is well known in art to control laser power with the help of up/down counter and related circuits. The Applicants also has admitted laser power is controlled by help of the up/down counter and related circuits [see fig. 1; Prior Art]. Hayashi clearly discloses that an alternate way to control laser power is also well known in the art [fig. 4; Hayashi]. Hayashi also discloses:

an up/down counter [fig. 4, unit 17] which up/down counts the binary decision signal in accordance with the comparison result of the comparator to generate a count result [col. 5, lines 10-49];

a laser diode driver [fig. 4, unit 22] which controls a level of the power of the laser diode according to the count result of the up/down counter [col. 5, lines 10-49]; and

an automatic power controller (APC) [fig. 4, unit 23] which controls an automatic power control of the laser diode, the APC controller being interposed between the up/down counter and the laser diode driver, the APC controller latching the count result of the up/down counter in synchronism with a periodic synchronization signal [fig. 4, signal S1], and outputting the latch result [fig. 4, unit 21 latches the results] to the laser diode driver [col. 5, line 50 to col. 6, line 12].

Both Suzuki and Hayashi are interested in providing automatic power control of the laser in most efficient way. Both are providing these control with slightly different circuits and components to achieve the same exact end result. Both are providing synchronization signals to control the power.

Therefore, it would have been obvious to provide the system of Suzuki with automatic laser power controlling means and associated details as taught by Hayashi. The application or use of the automatic laser power controlling means as taught by Hayashi would have been obvious, because the automatic laser power controlling means performs the same function as the automatic laser power controlling means of Suzuki's system, and is an equivalent element. One of ordinary skill in the art would have recognized that the automatic laser power controlling means of Hayashi was an equivalent element and an obvious alternative to automatic laser power controlling means of system of Suzuki.

29. As to claim 13, Hayashi discloses:

the synchronization signal has a predetermined enable interval [fig. 4, unit 15 provides this], and the APC controller latches the counted result from the up/down counter at an end of the enable interval [col. 5, line 50 to col. 6, line 12].

30. As to claim 14, Hayashi discloses:

the APC controller samples the counted result from the up/down counter during the enable interval, and latches an average of a predetermined number of the sampled counted results [col. 5, line 50 to col. 6, line 12].

31. As to claims 15-21, they are system claims corresponding to claims 5-9 and 7-8 respectively and they are therefore rejected for the same reasons set forth in the rejection of claims 5-9 and 7-8 respectively, supra.
32. As to claim 26, Hayashi discloses:
comparing a level of the power of the laser diode to the reference level;
up/down counting according to the compared result to determine a counted result;
latching the counted result in accordance with the synchronization signal to determine a latched power signal; and
controlling the power of the laser diode in accordance with the latched power-signal [col. 5, line 10 to col. 6, line 13].
33. As to claims 31, 33 and 49, 51 Hayashi discloses:
sampling the counted result;
averaging a predetermined number of the sampled counted results to determine an average value; and
latching the average value in accordance with the synchronization signal, to determine the latched power signal [col. 5, line 10 to col. 6, line 13].
34. As to claim 40, Hayashi discloses:
a comparator [fig. 4, unit 16] which compares the detected power level of the laser diode with a reference level [Vref1]; and
an up/down counter [fig. 4, unit 17] which up/down counts according to the output of the comparator to determine a counted result, wherein the counted result is input as the power signal to the automatic power controller [col. 5, line 10 to col. 6, line 13].

35. Claim 23 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Suzuki and Aoki as applied to claims 1-11, 22, 24, 27, 32, 34-39, 41-42, 48 50 and 53 above, and further in view of Hayashi et al., US. patent 5,146,240 (hereafter Hayashi).

As to claim 23, combination of Suzuki and Aoki discloses all of the above steps including the step (b) comprises generating the synchronization signal selectively in accordance with a sub automatic power control mode [mirror mode or gap mode] [col. 1, lines 29-53]; and

a sub-average APC mode for the disc.[col. 1, lines 29-53; Aoki].

Combination of Suzuki and Aoki does not specifically disclose that automatic laser power control is accomplished with the help of an up/down counter and D/A or DAC. However it is well known in art to control laser power with the help of up/down counter and related circuits. The Applicants also has admitted laser power is controlled by help of the up/down counter and related circuits [see fig. 1; Prior Art]. Hayashi clearly discloses that an alternate way to control laser power is also well known in the art [fig. 4; Hayashi]. Hayashi also discloses a DAC [D/A], unit 21 in fig. 4] and laser power control with the help of the DAC.

All Suzuki, Aoki and Hayashi are interested in providing automatic power control of the laser in most efficient way. All are providing these control with slightly different circuits and components to achieve the same exact end result.

Therefore, it would have been obvious to provide the system of Suzuki and Aoki with automatic laser power controlling means and associated details as taught by Hayashi. The application or use of the automatic laser power controlling means as taught by Hayashi would have been obvious, because the automatic laser power controlling means performs the same function as the automatic laser power controlling means of Suzuki and Aoki's system, and is an equivalent element. One of ordinary skill in the art would have recognized that the automatic laser power controlling means of Hayashi was an equivalent element and an obvious alternative to automatic laser power controlling means of system of Suzuki and Aoki.

As to rest of the claim Hayashi discloses: an average APC mode [col. 6, lines 13 to col. 7, line 2].

Allowable Subject Matter

36. Claims 25, 28-30, 43-47, and 56 are objected as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Also claims 28-30 and 45-47 are subject to overcoming the objection of claims as presented in paragraph 5, supra.

NOTE: Claims 25, 28-30, 43-47, and 56 are allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a method which includes five steps which includes "adjusting the reference level to five different values for five different and distinct modes". It is noted that the closest prior art, Suzuki et al. (US 6,246,659) shows a similar apparatus which performs these steps and gives a reference voltage [for reference power P_w]. And Hayashi et al., (US 5,146,240) also clearly shows a reference voltage V_{ref1} . However Suzuki and/or Hayashi fails to disclose five different reference voltage values for five different modes and adjusting power accordingly as disclosed in claim 25. Similarly "five different up/down counters latching five different values and associated details" are not disclosed by either references, as disclosed in claims 28-30. Similarly "five latches latching five different values and a multiplexer outputting second through fifth value and two comparators" are not disclosed as claimed in claims 43-44 and 56. Similarly claims 45-47 are allowed for the same reasons as claims 28-30 above.

Other prior art cited

37. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Tasukamura et al. (US. patent 5,157,642) "**Optical disc recording/reproduction apparatus with improved track seeking**".

b. Tsuchinaga et al. (US. patent 6,477,131) "Head amplifier and an optical disk device using the same".

c. Otsuka (US. patent 6,324,198) "Apparatus and method for compensating for temperature of laser diode".

d. Yoshikawa (US. patent 4,858,219) "**Optical information recording reproducing memory system with both power control and optical irradiation inhibiting circuit**".

e. Dang et al. (US. patent 6,285,641) "Device for writing and/or reading optical recording medium of various designs".

f. Joo et al. (US. patent 6,469,979) "Method for detecting servo error ...".

g. Sato et al. (US. patent 6,310,854) "Optical disk having areas of different recording densities or functions".

h. Russell et al. (US. patent 6,414,974) "Method and a control circuit for controlling the extinction ration of a laser diode".

i. Jeong (US. patent 5,953,305) "Method for detecting mirror signal and the same circuit".

Contact information

38. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gautam R. Patel whose telephone number is (703) 308-7940. The examiner can normally be reached on Monday through Thursday from 7:30 to 6.

The appropriate fax number for the organization (Group 2650) where this application or proceeding is assigned is (703) 872-9314.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Doris To can be reached on (703) 305-4827.

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Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 305-4700 or the group Customer Service section whose telephone number is (703) 306-0377.

CR

Gautam R. Patel
Patent Examiner
Group Art Unit 2655

February 21, 2003

CR Patel
2/24/03